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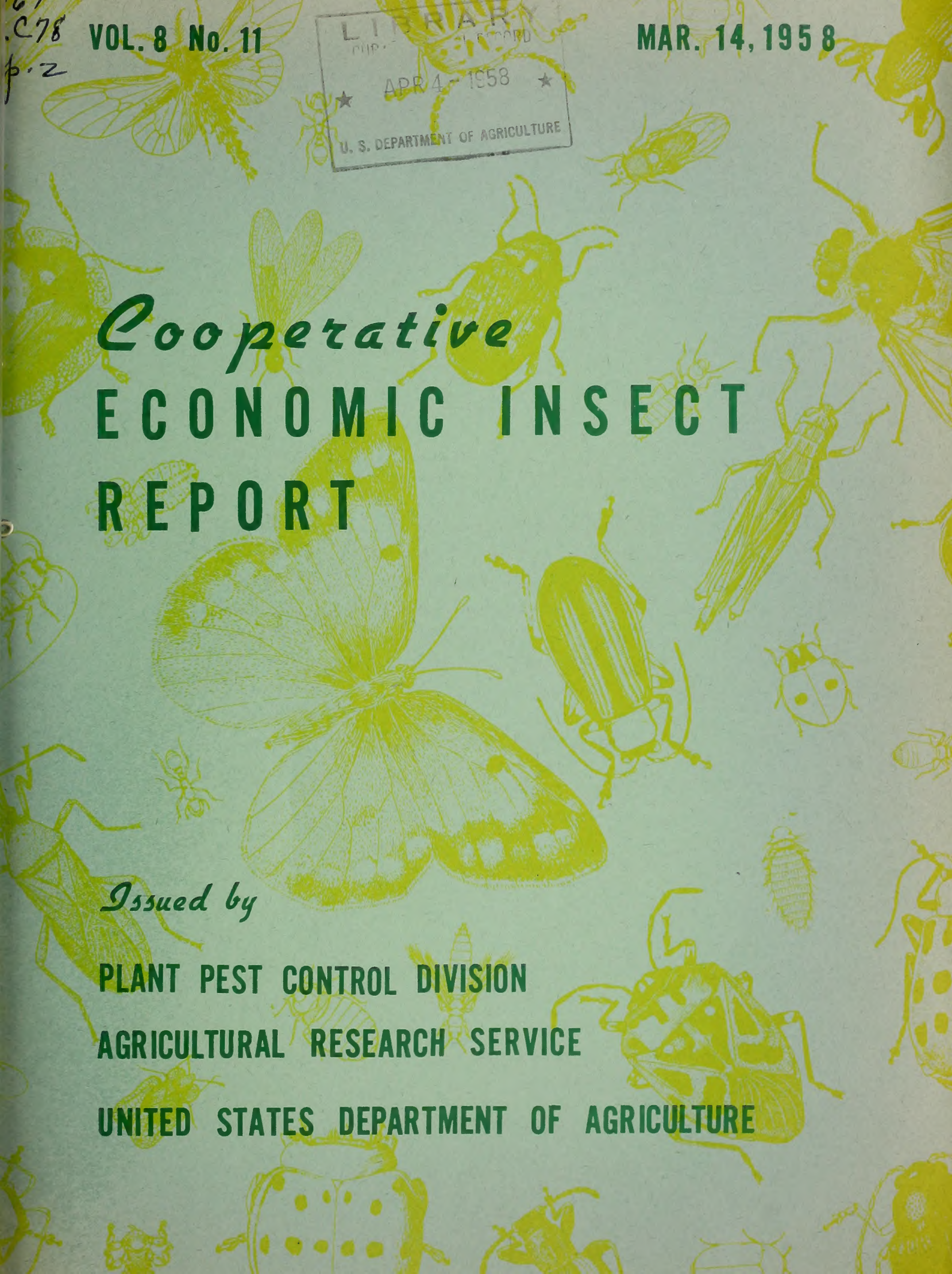

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Division
Agricultural Research Service
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Volume 8 March 14, 1958 Number 10

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

GREENBUG locally heavy in some fields in central Oklahoma, moderate in areas of Alabama and light in one Georgia county. (p.185).

Economic infestations of ARMY CUTWORM appearing in some counties of Oklahoma. (p. 185).

CHINCH BUG survey indicates very severe infestation potential in western Missouri, eastern Kansas, central Oklahoma and in a small area of east central Illinois. (p. 186).

Outlook for BEET LEAFHOPPER in the Intermountain Region calls for moderate to heavy movement into crop areas. (p. 188)

VEGETABLE WEEVIL light to moderate in tobacco plant beds in Georgia areas. (p. 188)

Over 88,000 acres treated in IMPORTED FIRE ANT eradication program. (p. 190).

SUMMARY OF INSECT CONDITIONS - 1957 - Illinois (p. 192), Wisconsin (p. 194), Kansas (p. 199), Colorado (p. 201).

INSECT LOSS estimates tabulated for some States. (p. 205).

CORRECTIONS and ADDITIONAL NOTES. (p. 190).

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Reports in this issue are for the week ending March 7, 1957 unless otherwise designated.

WEATHER OF THE WEEK ENDING MARCH 10

Heavy snowfall in the central Great Plains was the only unusual feature of last week's weather. These snows, without drifting, fell both early and late in the week, with weekly totals ranging up to 14 inches in Colorado and 20 inches in Kansas and western Oklahoma. On the 8th a few stations in Kansas still reported 30 inches on the ground. The snowfall moved into the Mississippi Valley over the weekend, and 2 to 9 inches fell over the northern half of Missouri and 3 to 6 inches across central Illinois. Rain and snow produced rather heavy moisture totals in Arizona and New Mexico and rainfall was mostly moderate to heavy in other southern areas. Weekly totals were greatest in east Gulf coastal sections where they ranged up to 8 inches. In northern areas and most of the Far West, amounts were light, except for an inch or more west of the Cascade Mountains. Soil moisture is now adequate to excessive in the South and ample elsewhere, except in some small areas of eastern Montana and the Far Southwest.

Temperatures averaged as much as 9° below normal in the central Great Plains where heavy snowfall occurred, and about 3° below normal in the Ohio Valley. Elsewhere east of the Rockies temperatures were mild for the season, except along the north-central Border and in northern New England where they were unusually mild with weekly averages ranging up to 12° above normal. Colder air, however, which started moving into the Northeast the latter part of the period reduced temperatures to about normal levels over the weekend. West of the Continental Divide temperatures averaged 3° to 6° below normal. This was the first time in several weeks that temperatures have averaged below normal in the Pacific Northwest. The week's temperature regime for the entire country showed little day to day change and was without any unusual extremes. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Toxoptera graminum) - ALABAMA - Moderate infestations in wheat and oats in southeastern and central areas, with counts of 15 per 10 sweeps. (Grimes). GEORGIA - Light infestations on small grain, Houston County. (Johnson, March 3). OKLAHOMA -Locally heavy in some fields in central area. Few fields average 40-60 per linear foot of row, with most considerably less, Logan County. Few fields averaged 100-150 per linear foot with damage evident, Cleveland County. Numbers rare-occasional in other southern and southwestern counties. Lady beetles feeding on aphids in Cleveland County. (Coppock, Owens).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Abundant in some fields, Tillman and Cotton Counties. Lighter in adjacent counties. (Coppock, Owens).

GRASSHOPPERS - NEW MEXICO - Few first and second-instar nymphs in Rio Grande River Valley near Las Cruces, Dona Ana County. Moisture conditions favorable with possibility hatch may occur earlier than in past several years. It is estimated there will be requests for cooperative control programs on approximately 150,000 acres in Union County. (N. Mex. Coop. Rept.)

ALFALFA WEEVIL (Hypera postica) - NORTH CAROLINA - Larvae half grown in some fields in Rockingham County. Small larvae present in alfalfa fields in Montgomery and Wake Counties. (Farrier, Neunzig). DELAWARE - Few small larvae feeding in folded alfalfa leaflets and buds, New Castle and Kent Counties. (MacCreary, Conrad).

CLOVER LEAF WEEVIL (Hypera punctata) - OKLAHOMA - Beginning to appear in scattered fields in south central area. (Coppock, Owens).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OKLAHOMA - Numbers average over 100 per linear foot in a few scattered wheat fields in Cotton County. Populations occasional to light in most fields in central and southern areas. (Coppock, Owens).

ARMY CUTWORM (Chorizagrotis auxiliaris) - OKLAHOMA - Economic infestations in Greer, Kiowa, Caddo and Canadian Counties. Feeding damage light. Most larvae in early instars. Populations averaged 0.25-3.3 larvae per square yard of surface area. (Coppock, Owens).

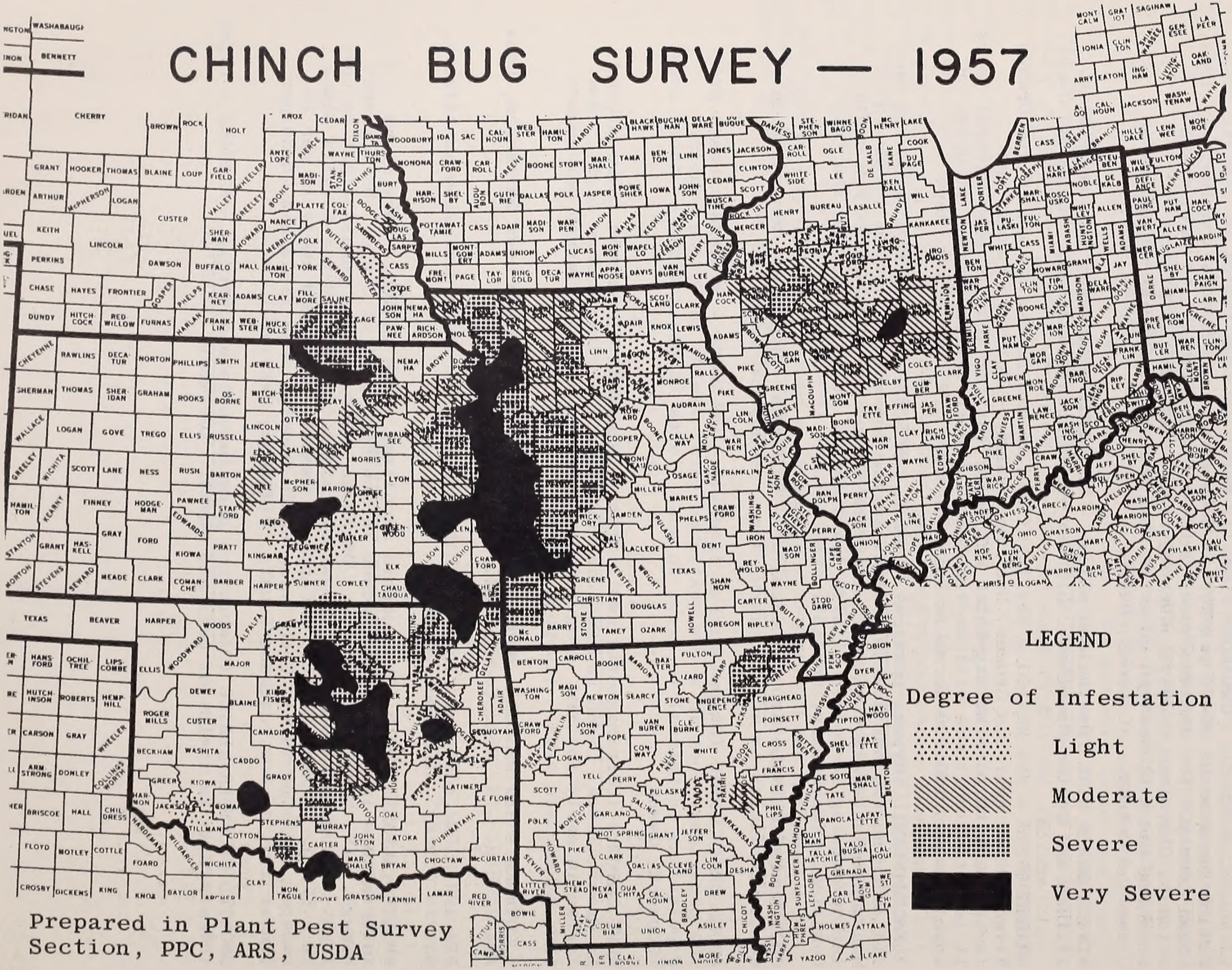
A CUTWORM - NEW MEXICO - Moderate infestation in alfalfa near Fairacres, Dona Ana County. (N. Mex. Coop. Rept.).

PEA APHID (Macrosiphum pisi) - OKLAHOMA - Average 10-30 per crown in alfalfa, Garvin County. (Coppock, Owens).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Very light infestations in most field checked in southern part of State. No apparent damage. (N. Mex. Coop. Rept.). OKLAHOMA - Populations remain light to very light throughout the State. Heaviest infestation was 10 per alfalfa plant in 1 field, Tillman County. (Coppock, Owens). Averaged about 15 per 10 sweeps, 2 fields in Ft. Cobb area, Caddo County. One field had 15-20 per linear foot of row, Jackson County. (Hudson, Hatfield).

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - ALABAMA - Light infestations in fields of oats and wheat. (Grimes).

CHINCH BUG SURVEY — 1957



Prepared in Plant Pest Survey
Section, PPC, ARS, USDA

FRUIT INSECTS

ROSY APPLE APHID (*Anuraphis roseus*) - OREGON - Winter eggs were hatching February 28 in Jackson County. Fairly abundant. (Capizzi).

APPLE APHID (*Aphis pomi*) - OREGON - Eggs began hatching on apple shoots March 3, Jackson County. Not as abundant as in 1957. (Capizzi).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - OREGON - Winter eggs have been hatching on pear trees since March 1 in Jackson County. (Gentner).

PEAR LEAF BLISTER MITE (*Eriophyes pyri*) - OREGON - Appearing in pear fruit buds, Jackson County. (Capizzi, March 4).

SPIDER MITES - CALIFORNIA - Medium infestation of *Tetranychus telarius* and *Panonychus ulmi* adults and eggs on Barlett pear in Courtland area, Sacramento County. (Cal. Coop. Rept.).

SAN JOSE SCALE (*Aspidiotus pernisiosus*) - LOUISIANA - Present in damaging numbers in some areas. (Spink). OKLAHOMA - Heavy infestation on scattered trees in 1 native pecan orchard, Garvin County. (Coppock, Apt).

PECAN NUT CASEBEARER (*Acrobasis caryae*) - OKLAHOMA - Inspection of 300 pecan branch tips for overwintering hibernacula was negative, Garvin and Love Counties. (Coppock, Owens).

LESSER PEACH TREE BORER (*Synanthedon pictipes*) - LOUISIANA - Present in damaging numbers in several orchards in Ruston area, Lincoln Parish. All stages from first instar larvae to pupae present. (Spink, March 2).

COTTONY-CUSHION SCALE (*Icerya purchasi*) - CALIFORNIA - Medium infestations on dooryard lemons in Sacramento, Scaramento County. (Cal. Coop. Rept.).

TRUCK CROP INSECTS

BEET ARMYWORM (*Laphygma exigua*) - CALIFORNIA - Light populations in cabbage at National City, San Diego County. (Cal. Coop. Rept.)

CABBAGE APHID (*Brevicoryne brassicae*) - GEORGIA - Infestations light-moderate on collards and cabbage, Colquitt, Lowndes and Cook Counties. (Johnson,March 4).

GREEN PEACH APHID (*Myzus persicae*) - OKLAHOMA - Populations range 1-12 per plant in 2 spinach fields at Bixby, Tulsa County. (Walton).

ONION THRIPS (*Thrips tabaci*) - NEW MEXICO - Light to moderate infestations on fall and spring onions, Dona Anan and Luna Counties. (N. Mex. Coop. Rept.).

SEED-CORN MAGGOT (*Hylemya cilicrura*) - OKLAHOMA - No eggs found on spinach at Bixby, Tulsa County. (Walton).

BEET LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - Survey reveals very few nymphs hatching in the Los Banos, Buena Vista and McKittrick Hills area of the San Joaquin Valley. Spring rains have caused good growth of winter vegetation, however, large areas remain favorable for spring breeding. (Cal. Coop. Rept.).

Beet Leafhopper Conditions in Utah, Western Colorado, Southern Nevada, Southeastern California and Central Arizona - 1958

The beet leafhopper spring movement from the southern desert breeding grounds to the cultivated districts of southern and south central Utah, southern Nevada, western Colorado, central Arizona and southeastern California is expected to be heavy. The movement to northern Utah is expected to be moderate to heavy. The local movement from the breeding grounds of northern and eastern Utah to the adjacent cultivated districts of northern Utah and western Colorado is expected to be moderate to heavy. This statement is based upon present conditions. The movement of the leafhopper into cultivated districts of central and southern Arizona and southeastern California is expected to start by late February to early March. The movement of the leafhopper into the cultivated districts of southern Nevada and southern Utah is expected to start by late March to early April. The movement to central Utah and western Colorado is expected to start by mid-April and will reach its peak by mid-May. The local movement to northern Utah and western Colorado is expected to start by late May and reach its peak in mid-June. The abundance of the population engaged in these movements will depend upon unpredictable weather fluctuations during the next two months. However, as a result of experience in previous seasons, conditions as observed in 1958 are similar to 1940 and have been associated with a heavy movement of leafhoppers to the cultivated districts. A later statement will be issued on beet leafhopper conditions based on additional information obtained from field studies now in progress. The distant southern breeding ground estimated to be 50,000 square miles was studied in mid-February, 1958, in co-operation with state or federal officials. Host plants were found to be present in 70 percent of the 385 ten-mile sampling points in the entire area breeding grounds in 1958 in comparison to 14 percent in 1957, 3 percent in 1956, 36 percent in 1955, and 48 percent in 1952. The average leafhopper population in the approximately 35,000 square miles studied where plants were present averaged 1.0 per square foot of weed host and was four times higher than in 1952. The plants present and the stand are favorable for beet leafhopper breeding. Additional leafhoppers may be present in northern Mexico where it has been reported good host plant conditions exist. Beet leafhoppers collected from various annual host plants in the southern breeding grounds in February, 1958, showed about 25 percent to be viruliferous or capable of transmitting the virus that causes curly top disease. This is in comparison to 6 percent in 1957, 10 percent in 1956, 20 percent in 1955 and 10 percent in 1952. The percentage of viruliferous beet leafhoppers that overwintered in 1958 in northern Utah breeding ground has not been determined. On the basis of the acreage of host plants, the beet leafhopper population and the percentage of the insects that are viruliferous, it is estimated 235 billion infective leafhoppers were present in the southern breeding grounds in the February study. By comparison the population in 1957 was estimated at 158 million and 1952, 7 billion. (Dorst, Knowlton).

TOBACCO INSECTS

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - GEORGIA - Light infestation on tobacco plant beds in Colquitt County. (Johnson, March 5).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Infestations on tobacco plant beds light to moderate in Colquitt, Mitchell, Grady, Lowndes and Cook Counties. (Johnson, March 5).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

EASTERN TENT CATERPILLAR (*Malacosoma americanum*) - LOUISIANA - Hatching on plum and cherry in Lincoln and Claiborne Parishes, February 28-29. (Spink).

A CEANOTHUS SCALE (*Lepidosaphes ceanothi*) - CALIFORNIA - Light infestatior at Montrose, Los Angeles County. This is a new location in the State. (Cal. Coop. Rept.).

AZALEA BARK SCALE (*Eriococcus azaleae*) - NORTH CAROLINA - Local infestations on azalea, Chatham County. (Scott, Farrier).

YELLOW SCALE (*Aonidiella citrina*)- CALIFORNIA - Heavy infestation on jasmine in Sacramento, Sacramento County. (Cal. Coop. Retp.).

INSECTS AFFECTING MAN AND ANIMALS

CATTLE GRUBS (*Hypoderma* spp.) - NORTH CAROLINA - Moderate to severe infestation in Ashe County. Infestations found in 4 of 5 herds examined in Buncombe County, with 50 percent of the infested animals averaging 1-2 grubs. Very few animals infested in 1 of 4 herds examined in Henderson County. None found in over 300 head examined in Union County. Severe infestations occurred two to three years ago in Buncombe and Henderson Counties. (Jones). UTAH - Infestations approaching peak in several counties. Peak of infestation past in Washington County. (Knowlton). NEW MEXICO - Annoying range cattle in Hidalgo County. (N. Mex. Coop. Rept.). OKLAHOMA - Averaged 1.6 grubs per animal on 28 head of yearling steers, Woodward County. (Allison, February 28).

CATTLE LICE - NEW MEXICO - Some light infestations on range cattle, Luna and Hidalgo Counties. (N. Mex. Coop. Rept.).

FOWL TICK (*Argas persicus*) - GEORGIA - Infesting ckicken house in Appling County. (Jordan, March 4).

STORED-PRODUCT INSECTS

KHAPRA BEETLE (*Trogoderma granarium*) - CALIFORNIA - One new infestation in Wasco area, Kern County. To date 77,000 inspections and reinspections have been made by cooperating agencies in the State. (Cal. Coop. Rept.).

CARPET BEETLES - DELAWARE - A mixed infestation of *Anthrenus verbasci* and *Attagenus piceus* heavily damaging woolen garments and lightly damaging adjacent rayon garments. (MacCreary, Conrad).

DRUG-STORE BEETLE (*Stegobium paniceum*) - NORTH CAROLINA - Adults and larvae destroying Japanese-made toys in a store in Wake County. (Jones, Spilman, February 6).

BENEFICIAL INSECTS

HONEY BEE (*Apis mellifera*) - CALIFORNIA - Sampling for Nosema disease began February 27 with samples from 18 hives. An infection of 2 percent was found in 1 hive only. (Cal. Coop. Rept.).

DAMSEL BUGS (*Nabis* spp.) - NEW MEXICO - Numerous in many fields in Dona Ana and Luna *Counties*. (N. Mex. Coop. Rept.).

MISCELLANEOUS INSECTS

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - Total acreage treated in eradication program to February 28, 1958, is 88,353. Breakdown by States is as follows: Alabama, 8,576; Arkansas, 11,211; Florida, 3,000; Georgia, 50,500; Louisiana, 11,537; Mississippi, 3,209; North Carolina, 82; South Carolina, 212; Texas 26. All infested land in North Carolina now treated. Treatments have begun in Opelousas district of Lousiana and in Autauga, Montgomery and Perry Counties, Alabama. (PPC, Sou. Reg.).

AMERICAN COCKROACH (*Periplaneta americana*) - GEORGIA - Massive infestation of a large milling company in Fulton County. Det. A. J. Brooks. (CDC Ent. Mus.).

BOXELDER BUG (*Leptocoris trivittatus*) - UTAH - Again annoying in several localities. (Knowlton). MARYLAND - Entering homes and causing annoyance to homeowners, Montgomery and Somerset Counties. (U. Md., Ent. Dept.).

NORTHERN FOWL MITE (*Ornithonyssus sylviarum*) - NORTH CAROLINA - Numerous on a fire place mantle, Warren County. (Reams, Farrier).

CORRECTIONS In CEIR 8(8):129 delete Santa Clara County, California from map of *Diabrotica balteata*.

LIGHT TRAP COLLECTION

	Pseudaletia unipuncta	Agrotis ypsilon	Peridroma margaritosa	Feltia subt.	Prodenia orn.
LOUISIANA					
Baton Rouge 2/28-3/6	5	6	5	1	
Franklin 2/26-3/4		1		1	1
SOUTH CAROLINA (County)					
Charleston 2/24-3/9	31	19	8	7	3

ADDITIONAL NOTES

NEVADA - SPOTTED ALFALFA APHID populations very light in Moapa and Virgin Valleys, Clark County, and in Pahrump Valley, Nye County. PEA APHID infestation very light on alfalfa in Moapa and Virgin Valleys, Clark County, and light to medium in Pahrump Valley, Nye County. (Hoff, Zoller). CUTWORM populations light to medium in alfalfa at Mesquite, Clark County. (Zoller). LYGUS BUGS present in alfalfa in small numbers in Moapa and Virgin Valleys, Clark County. A DIPTEROUS LEAF MINER causing considerable damage to alfalfa in Virgin Valley, Clark County. (Hoff). LADY BEETLES very abundant in alfalfa in Pahrump Valley, Nye County. (Zoller). CLOVER MITE continuing to enter homes in Reno-Sparks area, Washoe County. (Bechtel, et al.). CARPET BEETLES causing damage in Reno, Washoe County. (Gardella).

SUMMARY OF INSECT CONDITIONS - 1957

ILLINOIS

Prepared by C. E. White

Highlights: EUROPEAN CORN BORER numbers decreased considerably since 1956 generally, but in some west-southwest counties some increase was observed. A protozoan disease (*Perezia pyraustae*) was very abundant in September. FALL ARMYWORM was common, doing some damage to corn in the southern half of the State. SPOTTED ALFALFA APHID and PEA APHID were relatively light throughout the year. MEADOW SPITTLEBUG was numerous and increased in abundance in northern counties.

Clover and Alfalfa Insects: PEA APHID (*Macrosiphum pisi*) was low throughout season. Greatest number up to August 28 was 160 per sweep compared with 1,600 in 1956. Approximately 18,000 acres were treated in 1957 compared with 75,000 in 1956. SPOTTED ALFALFA APHID (*Therioaphis maculata*) was first found June 12 in Hancock County. Populations were relatively light with very few fields reaching 1,000 per sweep. Last year populations of 1,000 to 7,000 per sweep were very common. Heavy and timely rains kept populations down. An estimated 2,407 acres were treated at an estimated profit of $12,000. SWEETCLOVER APHID (*Myzocallidium riehmi*), first taken in 1956, was found in 10 widely scattered counties ranging from Hamilton and Monroe Counties in the south to Jo Daviess and Kendall Counties in the north. CLOVER LEAF WEEVIL (*Hypera punctata*) populations in early April were about three times greater than at a similar period in 1956, averaging 19.5 per square foot or slightly greater than in 1955. An estimated 22.5 percent of the clover fields could have profitably been treated at that time. Disease was important in reducing populations in late April and early May; however, they remained economic in some fields May 2-8 with 13 percent of the larvae pupated. It is estimated that only 18,190 acres were treated at a profit of $45,475. CLOVER ROOT BORER (*Hylastinus obscurus*) averaged 40 adults per 100 sweeps in the northeast section April 25 to May 1, with as many as 230 per 100 sweeps in one field. This is apparently the heaviest population ever recorded in Illinois. GARDEN FLEAHOPPER (*Halticus bracteatus*) did moderate damage to a few alfalfa fields in southern area. GARDEN WEBWORM (*Loxostege similalis*) populations reached 240 per 100 sweeps in some alfalfa fields during August. From 50 to 100 percent of the plants were infested with webbing in some fields. GRASSHOPPERS (*Melanoplus* spp.) were not quite as abundant as in 1956. However, an estimated 22,878 acres (including fence rows, ditch banks, waterways, etc.) were treated for control with profits from treatment estimated at $114,390. The fall adult survey showed a light infestation in western and northwestern sections with non-economic populations everywhere else in the State. LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostris*) was more abundant than in 1956. An everage of about 50 percent of red clover stems were infested by larvae May 2 to June 15 compared with 28 percent in late May 1956. Many fields had 100 percent of the stems infested. MEADOW SPITTLEBUG (*Philaenus leucophthalmus*) populations increased this year. A few fields in northern sections averaged more than 2 nymphs per stem May 10 to 15, and populations of 1 nymph per stem were found in many fields from late April to early June. However only an estimated 9,896 acres were treated for control, with profits from treatments estimated at $19,750. The fall adult survey showed a severe population in most of the northwest section and approximately half of the northeast section. A small area in Boone, McHenry, and Winnebago Counties was very severe. The eastern border from Clark County northward was mostly moderately infested. ALFALFA PLANT BUG (*Adelphocoris lineolatus*) and TARNISHED PLANT BUG (*Lygus lineolaris*) populations were about the same as in 1956 with an undetermined amount of damage done to red clover seed fields. POTATO LEAFHOPPER (Empoasca fabae) populations were heavier than in 1956. An estimated 30 to 50 percent of the alfalfa fields in the southern half to two-thirds of the State could have profitably been treated to control this pest in the second crop. Damage in southern fields was moderate to very severe. An estimated 25,262 acres were treated at a profit of $50,520. This pest caused an estimated $1,363,600 worth of damage by reducing yield of alfalfa hay. When quality of hay produced is also considered the total damage is estimated at $4,500,000. An est. 12,172 acres were treated against SWEETCLOVER WEEVIL (Sitona cylindricollis) at a profit of about $12,000. An estimated $328,400 worth of damage was done to clover hay yields by all insects this year.

Corn Insects: CHINCH BUG (Blissus leucopterus) populations were fairly low although some isolated fields were damaged. An estimated 4,598 acres (includes small grain fields treated) were treated at a profit of $22,890. There were 200 acres of corn destroyed. An estimated loss of $12,000. A survey October 3-9 in five southeast counties showed some damage to 90.4 percent of ears by CORN EARWORM (Heliothis zea) and FALL ARMYWORM (Laphygma frugiperda) with an average of 15 corn earworm and 7 fall armyworm larvae per 100 ears. A survey in Lawrence and Marion Counties showed some damage to 68 percent of ears with an average of 5.2 earworms and 47.6 fall armyworms per 100 ears. CORN FLEA BEETLE (Chaetocnema pulicaria) populations were low during May and June and little if any damage was done. Very few fields averaged as much as one beetle per plant this year. CORN LEAF APHID (Rhopalosiphum maidis) was very abundant on corn. CUTWORMS, mostly the BLACK CUTWORM (Agrotis ypsilon) did much damage to corn although not as much as in 1956. An estimated 16,146 acres were treated at a profit of $80,730 and an additional 15,000 acres required replanting at an estimated loss of $150,000. EUROPEAN CORN BORER (Pyrausta nubilalis) populations were lower than in the last 5 years. However, populations in some west-southwest counties showed an increase. Diseased and dead borers were more abundant this fall than in past years. An estimated 165,408 acres were treated returning profits estimated at $661,630. It has also been estimated that the corn borer caused $11,085,000 worth of damage to corn grown for grain this year. FALL ARMYWORM (Laphygma frugiperda) was present in early July and by the middle of August was scattered throughout the State. However, most damage occurred in the southern half of the State. Late planted corn was most heavily infested with damage occurring before the tassel emerged from the whorl. After tassels emerged and ears began to develop as many as 200 larvae per 100 ears were found. NORTHERN CORN ROOTWORM (Diabrotica longicornis) severely damaged some untreated fields which had been planted to corn 2 or more years in succession. THRIPS were very numerous in east-southeast sections. Silvering of corn leaves was very noticeable in some fields in July. WHITE GRUBS (Phyllophaga spp.) damaged several corn fields in the central section with as much as 50 percent of the plants damaged and an average of two grubs per plant. WIREWORMS caused some damage in central and southern Illinois. An estimated 657,267 acres were treated returning a profit estimated at $1,643,100. Disregarding the above figures it is estimated that soil insects caused a loss of approximately 25,529,600 bushels of corn valued at $27,141,932, and approximate 4.8 percent loss.

Grass Insects: A WEEVIL (Centrinaspsis sp.) averaged 1 to 2 per sweep and was causing damage to red top fields the middle of May.

Small Grain Insects: ARMYWORM (Pseudaletia unipuncta) was scarce throughout the season with no serious damage. CHINCH BUG (Blissus leucopterus) although relatively scarce did a small amount of damage to grain fields in eastern sections. The fall survey showed only two counties rated as severe or very severe compared with 6 counties in 1956, 9 in 1955 and 19 in 1954. HESSIAN FLY (Phytophaga destructor) populations at wheat harvest in 1957 were slightly less than half the 1956 populations. The reduction was probably due to heavy spring rains.

Sorghum Insects: CORN LEAF APHID (Rhopalosiphum maidis) was very abundant in many grain sorghum fields. Some fields were treated. SORGHUM WEBWORM (Celama sorghiella) was present in many sorghum fields and did some damage this year.

Soybean Insects: BEAN LEAF BEETLE (Cerotoma trifurcata) was very numerous in southeastern areas where it caused noticeable defoliation in some fields. The overall damage, however, was very light. GREEN CLOVERWORM (Plathypena scabra) appeared in many soybean fields in late July and August but in most cases were effectively held in check by disease. An average of 34.4 percent of all larvae found in eastern sections were dead August 8-14.

Forest, Turf, Ornamental and Shade Tree Insects: BAGWORM (Thyridopteryx ephemeraeformis) populations, although fairly numerous in some locations, were not nearly as abundant nor as destructive as in 1956. YELLOW-NECKED CATERPILLAR (Datana ministra) was very abundant in the norhtern half of the State and seriously defoliated many trees. WALNUT CATERPILLAR (Datana integerrima) was also very abundant and completely defoliated many walnut trees in the northern half of the State. WHITE-PINE SAWFLY(Neodiprion pinetum) completely defoliated several white pines in a Christmas tree planting in northern Illinois. An ACROLOPHID (Acrolophus sp.) was reported as damaging 2 or 3 lawns in eastern Illinois.

Insects Affecting Man and Animals: MOSQUITOES were more abundant and more troublesome in 1957 than for several years. CLUSTER FLY (Pollenia rudis) was very annoying in many homes during March. Probably more abundant than for several years.

SUMMARY OF INSECT CONDITIONS - 1957

WISCONSIN

Prepared by Wis. Ins. Survey

Highlights: Several insect populations failed to increase as expected, notably first-brood EUROPEAN CORN BORER, ARMYWORM, GRASSHOPPERS, and PEA APHID. POTATO LEAFHOPPER feeding toxicity caused severe yield and quality losses in alfalfa. SIX-SPOTTED LEAFHOPPER, through the transmission of aster yellows virus, caused losses to truck crops that were the highest of any year in the past decade. Some APHID populations were exceptionally high early in the season. The first observation and identification of BLACK CHERRY FRUIT FLY was made from specimens on Door County cherries. A LOOPER, identified as Rachiplusia ou, was observed damaging mint and tobacco. This is the first identification of this insect as a pest in Wisconsin.

Weather and Insect Activity: The first readily noticeable outdoor insect activity began on a few scattered warm nights in March, but was curtailed by cooler weather until mid-April, when warm weather revived activity and continued to advance the season until about the second week in May. From this time on and throughout most of the summer temperatures were slightly cooler than normal. Also, frequent precipitation averaged heavier than normal during the growing season. These conditions tended to limit the importance of some insects which mormally are a problem. Also, it may explain the importance of some species which are infrequently a problem. Weather adverse to normal corn planting appears to have had an influence on first-brood European corn borer populations. Favorable weather for insect flight continued intermittently until December, as evidenced by blacklight trap catches.

Cereal, Forage, Potato, Pea and Tobacco Insects: POTATO LEAFHOPPER (Empoasca fabae)was first found on alfalfa in Rock, Grant and Lafayette Counties May 15. Populations increased slowly until the middle of July then became rapid with counts of 8 adults per sweep in Columbia, Dodge and Fond du Lac Counties. By the first of Aug. "yellowing" of alfalfa was noticeable and severe "hopper burn" was noted on unsprayed potatoes. Some commercial bean acreage was treated. During late August populations began to decline. This insect caused more reduction of yield and quality in alfalfa than other forage insects in 1957. Overwintering TARNISHED PLANT BUG (Lygus lineolaris) adults were common after mid-April in the south but were scarce north and east of Dodge County. The hatch occurred in Late July. ALFALFA PLANT BUG (Adelphocoris lineolatus) 1957 population was very high. GRASSHOPPERS first hatched in mid-June, which was later than in 1956. Second and third instar nymphs of Melanoplus bivittatus were present during week of June 24 in Waupaca, Langlade and Oneida Counties. Adults appeared in western areas by July 26. Adults of M. bilituratus were present in mid-August but M. femur-rubrum adults appeared later in some sections. In certain areas grasshoppers became numerous enough in early August to justify treatment. Grasshoppers were a problem in northern and southern tobacco growing areas. The 1957 adult survey revealed a high population in the central portion of the State and high egg concentrations were found in the same area. Spittle masses caused by MEADOW SPITTLEBUG (Philaenus leucophthalmus) nymphs were found in Crawford County by April 25 and counts of 2 nymphs per 10 alfalfa stems were present in Grant and Lafyette Counties. The State average was close to 2 per 10 stems. Large numbers of adults were present throughout the summer in most alfalfa growing regions.

A major portion of the southern corn crop was planted later than normal, but EUROPEAN CORN BORER (Pyrausta nubilalis) development appeared to be normal. Although there was a low carryover, winter survival was high. Parasitism, principally by Lydella grisescens, was determined to be 15.7% during the winter 1956-57 compared with 10.4% for 1955-56. Parasitism by the protozoan (Perezia pyraustae) was 5.1% this being the first determination for Wisconsin. In Grant County, first moth flights were noted in mid-June, and egg masses and leaf feeding on June 24. Extended moth flights in the Fond du Lac County area necessitated treatment on sweet corn. Parasitism by Horogenes punctorius was quite high on first-brood borers in some Grant County fields. Second-brood moths were present as early as July 29 in Grant County. Dissections in central Wisconsin revealed that as high as 15 percent of the borer larvae pupated to become second-brood. The 1957 fall survey revealed a population of 36 borers per 100 plants, a 50 percent increase over 1956. Many borer infested shanks were noted. CORN LEAF APHID (Rhopalosiphum maidis) flight activity was noted July 19. The 1957 infestation was higher than that of 1956. FALL ARMYWORMS (Laphygma frugiperda) were noted in Columbia County by August 9 on late planted corn but never exceeded 8 percent infestation. CORN EARWORM (Heliothis zea) moths were caught as early as August 5 in blacklight traps, but major flights were not recorded at the Arlington trap until late August and early September. Infestations were not a major problem in 1957. Subterranean insects in corn fields increased in importance during 1957 due to the prolonged period in which corn seed laid in the ground before and after germination. Surveys in south central regions showed an increase of WIREWORMS from 0.4 per 100 corn seedlings in 1956 to 4.0 in 1957 and were responsible for many uneven stands of corn. SEED-CORN MAGGOT (Hylemya cilicrura) decreased from 7.4 maggots per 100 seedlings in 1956 to 1.2 in 1957. CORN ROOT APHID (Anuraphis maidi-radicis) populations were high in some southern counties. NORTHERN CORN ROOTWORM (Diabrotica longicornis) was observed feeding in corn silks August 2 in Dane, Rock and Green Counties; goose-necked stalks were observed. PEA APHID (*Macrosiphum pisi*) populations in alfalfa and peas were low in southern and southwestern areas early in the season, remaining low in peas until mid-July when some treatment was required but a large portion of the crop was harvested by that time. The population in 1957 was the lowest observed for many years. Lady beetles and nabids were scarce during the pea growing season. ARMYWORM (*Pseudaletia unipuncta*) moth presence in light traps continued for a considerable length of time. Scattered locations of low larval populations were noted by June 28 on corn, small grain and peas. During the week of July 12, the populations in several pea fields in Green Lake, Columbia and Rock Counties became large enough to require treatment. A few small grain fields were treated. Although the spring was cool and wet, parasites prevented populations from becoming as high as expected. TOMATO HORNWORM (*Protoparce quinquemaculata*) and TOBACCO HORNWORM (*Protoparce sexta*) were less of a problem in northern and southern tobacco areas in 1957 than in 1956. An unidentified GREEN LOOPER was observed on several crops in the State and were numerous enough on peas in Sheboygan County to justify treatment. A LOOPER identified as *Rachiplusia ou* was observed damaging mint and tobacco during late June and early July. Potato flea beetle (*Epitrix cucumeris*), because of resistance to DDT, was a serious problem. Populations were not as high at the beginning of the season as in some years, but increased and later were a general problem except in northern sections. POTATO ROT NEMATODE (*Ditylenchus destructor*) was recovered from three fields not reported as being infested in 1956. While SPOTTED ALFALFA APHID (*Therioaphis maculata*) was found in several counties late in 1956, surveys in 1957 were negative indicating it had not overwintered in Wisconsin. APHIDS which transmit "yellow dwarf" virus in small grain had lower populations than in 1956.

Orchard Insects: CODLING MOTH (*Carpocapsa pomonella*) adults in Door County emerged June 7 compared with the emergence date of June 9 in 1956. Populations in Crawford County were light with occasional stings and new entry holes August 2. Second-brood codling moth populations were high in the Dane County area. The first APPLE MAGGOT (*Rhagoletis pomonella*) adult was caught June 29 in Dane County. In Door County adults were caught in early July and were less numerous than in 1956. A late flight of adults occurred on August 26 in Dane County. PLUM CURCULIO (*Conotrachelus nenuphar*) adults were difficult to find during the week of June 21 in Door County. Populations were moderate to heavy in cherry orchards but light in apple orchards. Crawford County infestations were light. APPLE APHID (*Aphis pomi*) populations were high and a serious apple orchard problem in Door County. RED-BANDED LEAF ROLLER (*Argyrotaenia velutinana*) adults emerged during late April and eggs hatched June 7 in Door County. FRUIT TREE LEAF ROLLER (*Archips argyrospila*) larvae fed before bloom in Door County. Populations were higher in 1957 than in 1956 but infestations were light in Crawford County. The larval population of EYE-SPOTTED BUD MOTH (*Spilonota ocellana*) was higher during late May 1957 than in 1956 in Door County. This insect was not a problem in Crawford County. CHERRY FRUITWORM (*Grapholitha packardi*) adults emergenced in Door County June 15 to June 28. EUROPEAN RED MITE (*Panonychus ulmi*) populations were similar to 1956 in Door County. Populations averaged 20-25 per leaf but began to decrease in August. The first observation and identification of BLACK CHERRY FRUIT FLY (*Rhagoletis fausta*) was made on Door County cherries.

Truck Crop and Small Fruit Insects: Spring migrations of SIX-SPOTTED LEAFHOPPER (*Macrosteles fascifrons*) adults were earlier in 1957 than in 1956; the first adults being collected on April 22. Population built up early in relation to the development of lettuce, carrots and celery. Aster yellows, a virus disease transmitted by this insect, appeared earlier than usual in Kenosha County carrots. By the end of the season, a high acreage of lettuce had been abandoned due to aster yellows. Infection of carrots in some Oconto County commercial fields reduced yield by 50 percent. Celery grown in the central muck region had a 30 percent infection and potatoes grown in northern Wisconsin had a 60 percent infection. Losses caused by the six-spotted leafhopper were higher in 1957 than any year in the past decade. ONION MAGGOTS (Hylemya antiqua) infested onions by June 28. Emergence was gradual making generations indistinguishable. Infestations were common through throughout the State. A high degree of infestation in Kenosha, Racine and Milwaukee Counties seriously affected over 90 percent of some commercial fields. CABBAGE MAGGOT (Hylemya brassicae) on radishes, rutabagas and turnips occurred as early as the onion maggot with heavy infestations on Shawano County radishes. IMPORTED CABBAGEWORM (Pieris rapae) adults were observed by May 17 and were more numerous than in the similar period of 1956. In 1957 there was considerable damage to untreated cabbage, especially in Outagamie County. CABBAGE LOOPER (Trichoplusia ni) was numerous by July 12 when moths caught in blacklight traps indicated a large second generation. The expected infestation occurred but damage was less than in 1956. ONION THRIPS (Thrips tabaci) populations were moderate on Kenosha County onions by June 21. This insect was troublesome for the first time in several years on onions and to a certain extent on cabbage, but in mid-July its population began to decline. STRAWBERRY LEAF ROLLER (Ancylis comptana fragariae) populations were medium to heavy in central sections but lower than in 1956. A very light infestation was reported in the northwest. ASPARAGUS BEETLE (Crioceris asparagi) was more numerous than SPOTTED ASPARAGUS BEE LE.

WHITE GRUB (Phyllophaga spp.) populations of June beetle brood A were medium to heavy throughout the State. Flights of the June beetle brood B were much lighter than 1956 flights of brood A. As early as May 24 medium to heavy populations of CUTWORMS were reported from many areas of the State. MEXICAN BEAN BEETLE (Epilachna varivestis) damage in a small Dane County area was higher than normal. Although this insect is not common in Wisconsin, its presence has been continually reported from this location. A ROOT KNOT NEMATODE was more prevalent in strawberries than in previous years. BLACK-HEADED FIREWORM (Rhopobota naevana), CRANBERRY FRUITWORM (Acrobasis vaccinii) and CRANBERRY TIPWORM (Dasyneura vaccinii) abundance in 1957 was light. Numerous RED-NECKED CANE BORER (Oberea bimaculata) adults appeared on unsprayed raspberry plantings week of June 24. Raspberry cane borer populations were lower in northwesern Wisconsin in 1957 than in 1956.

Forest, Ornamental and Shade Tree Insects: SMALLER EUROPEAN ELM BARK BEETLES (Scolytus multistriatus) were found in Sheboygan and Crawford Counties, locations not previously reported. Confirmed cases of Dutch elm disease increased from 63 in 1956 to 376 in 1957. Preparations were made to treat up to 200,000 acres of forest areas for control of JACK-PINE BUDWORM (Choristoneura pinus) in 1957 but natural control factors caused the outbreak to collapse. Treatment was applied to 18,735 acres in northwestern counties and about 7,400 acres in Oneida County. Survey showed defoliation was light except for some marginal areas of treated blocks. Eggs were difficult to find in most of the area concerned, and a control program is not anticipated in 1958. WHITE-PINE WEEVIL (Pissodes strobi) continued to cause heavy damage in northern and central plantations of white pine, jack pine and Norway spruce. Damage was common on red pine in northern areas. Damage was generally light in south and east central areas. EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) was reported from 23 counties. Damage resulted in a few heavily infested plantations and in some ornamentals. Good control resulted where recommendations were followed. A total of 3 JAPANESE BEETLES (Popillia japonica) were caught at three different locations; two in Milwaukee County and one in Racine County. One was caught in a trap at the same location where the only beetle was caught in 1956. These areas were treated. A total of 525 traps were placed in several locations. EUROPEAN ELM SCALE (Gossyparia spuria) female populations were slightly higher than for past several years in many sections. FOREST TENT CATERPILLAR (Malacosoma disstria) infestation was less in 1957, with heavy defoliation centered in southeastern Sawyer, Price and northeastern Rusk Counties. Small areas of severe and of light general defoliation were common in the remainder of the northern aspen area. Parasitism and predation were heavy in Sawyer, Price and Oneida Counties.

SARATOGA SPITTLEBUG (Aphrophora saratogensis) was light to medium in northwest areas with 153 acres of heavy infestation sprayed in Douglas County. Heavy infestations on 3,879 acres of red pine plantations in the northeast area were sprayed. Most spraying was in Marinette County with smaller acreages sprayed in Oconto, Langlade, Florence and Marathon Counties. An infestation of 25-30 acres was reported from Brown County. SADDLED PROMINENT (Heterocampa guttivitta) populations were very low in 1957 as compared with 1956 as a result of natural factors. Moderate to heavy infestations occurred on parts of Washington Island and in isolated areas of Door County. Severe defoliation by high MAPLE WEBWORM (Tetralopha spp.) populations occurred in some counties in the northeast, particularly in Florence County. Many dying maples were present in areas where there had been two years of defoliation. PINE ROOT COLLAR WEEVIL (Hylobius radicis) heavily damaged Scotch, jack and red pine plantations in areas of light soil with high populations in northwest, central and the lower Wisconsin River Valley counties. A heavy infestation was reported from Shawano County jack and Scotch pine plantations and from red and Scotch pine shelterbelts in Buffalo County. APHID populations on many trees, shrubs and perennials were exceptionally high. Damage to honeysuckle and snowball viburnum was heavy and general, and sooty fungus which developed on aphid "honeydew" was noticeable on many pines. ELM LEAF MINER (Fenusa ulmi) populations were heavy prior to June 1. BOXELDER BUG (Leptocoris trivittatus), SPRING CANKERWORM (Paleacrita vernata) and FALL CANKERWORM (Alsophila pometaria) populations were low. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) populations were high on some ornamentals early in the season as were THRIPS. A SAWFLY (Arge scapularis) again appeared on elm in Pierce County and MOURNING-CLOAK BUTTERFLY (Nymphalis antiopa) was more abundant than for several years. A MOTH (Calocalpe undulata) was present in high numbers locally, especially Columbia County. FALL WEBWORM (Hyphantria cunea) and EASTERN TENT CATERPILLAR (Malacosoma americanum) populations were relatively low.

WALNUT CATERPILLAR (Datana integerrima) populations appeared to be low but perhaps were given credit for premature defoliation that may have been due to a leaf disease. Heavy populations of SNOWY TREE CRICKET (Oecanthus niveus) were present in several localities. Defoliation by LARCH SAWFLY (Pristiphora erichsonii) was more conspicuous over a larger area than in 1956. Defoliation was heavy to complete over much of northern half of State. Many tamarack stands in the east central area were infested, some heavily defoliated. Light infestations were found in Portage, Waushara and Fond du Lac Counties. FRUIT TREE LEAF ROLLER (Archips argyrospila) infestations were light-medium in Florence, Marinette and Langlade Counties. Larval parasitism was heavy. WALKINGSTICK (Diapheromera femorata) populations were relatively low with light to moderate defoliation in Marathon, Door, Shawano, Oconto, Ashland, Sawyer and Washburn Counties. Heavy defoliation was local in Marinette, Kewaunee and Bayfield Counties. A JACK-PINE SHOOT BORER (Eucosma sonomana) was abundant in east central area jack-pine plantations and light to medium in Sauk, Richland, Iowa, Columbia and Oconto Counties.

Insects Affecting Man and Animals: Large numbers of FRESH WATER MIDGES (Tendipes spp.) began emergence in the Lake Winnebago area May 8 and were a nuisance for a long period during spring and summer. High populations were also noted along Lake Pepin in early May. BITING FLIES (Tabanidae) were seen in Dane County in early June with moderate to heavy populations reported from various areas by mid-July. Build-up of HOUSE FLY (Musca domestica) and HORN FLY (Siphona irritans) populations were noted during mid-July and were troublesome until mid-August. MOSQUITOES - Aedes vexans emergence began on April 16 in Columbia County, and a heavy brood was observed the latter part of May in Dane County. In Rusk County biting of *Anopheles* spp. was noted during early April and *Aedes stimulans* and *Aedes cinereus* emerged May 11. Treatment was applied in many instances to heavy mosquito populations which occurred in many localities. Medium to heavy populations of AMERICAN DOG TICK (*Dermacentor variabilis*) were reported as early as May 24 from northern and central Wisconsin. Heavy populations of a forest tent caterpillar PARASITE (*Sarcophaga aldrichii*) were reported from Price County. Major MAYFLY flights began on the night of June 9 in LaCrosse County.

Industrial, Storage, Greenhouse and Household Insects: TERMITES infested buildings in a nine block area in Sheboygan. Continued search in grain handling establishments for KHAPRA BEETLE (*Trogoderma granarium*) was negative. Occasionally COCKROACHES, CARPET BEETLES, SAW-TOOTHED GRAIN BEETLE (*Oryzaephilus surinamensis*), GRANARY WEEVIL (*Sitophilus granarius*) and CONFUSED FLOUR BEETLE (*Tribolium confusum*) were found in flour processing plants, bakeries, candy factories and similar industries. CHEESE MITES were the most important problem of cheese storage while carpet beetles were the important pest in dried milk products. FLIES were troublesome during warm weather. NEMATODES identified as *Tylenchorhynchus claytoni* commonly known as the tobacco stunt nematode, and *T. maximus* were recovered for the first time from Wisconsin greenhouses. SPIDER MITES continued to be the most serious greenhouse pest. WHITEFLIES and APHIDS were present and needed treatment from time to time. Reports of THRIPS on Easter lilies, LEAF MINERS on azaleas and CUTWORMS were received. Occasionally SCALES, CYCLAMEN MITE and MEALYBUG were a problem. Household pest numbers appeared to remain quite stable although inquiries about POWDER POST BEETLE increased.

Beneficial and Miscellaneous Insects: Wintering colonies of HONEY BEES (*Apis mellifera*) reached normal development by May 17, average colonies having 6-10 frames of brood and adequate supplies of honey and pollen in all but the northeast portion of the State. By June 7, bees had built satisfactory populations and since little nectar was available they were feeding on honey dew produced by aphids. During mid-June white, sweet and alsike clover blossoms became abundant resulting in good May buildings and bees produced a honey crop ranking fourth in the nation. Many colonies entered the winter with high populations and inadequate stores. Of 31,489 colonies inspected for American foulbrood (*Bacillus larvae*) 1,098 colonies were destroyed. During mid-July RED-ADMIRAL (*Vanessa atalanta*) were more numerous than for several years in Monroe and Juneau Counties and other sections, especially where nettles grew abundantly.

Blacklight Insect Trap Report: In 1956 it was decided to use blacklight insect traps in Wisconsin. Five traps were placed in different locations. The value indicated by results from these traps in relation to insect survey was confirmed by expansion of this program. In addition to the continuance of the operation of these traps, in 1957 additional traps were operated in new locations. The chief difference was their operation for practical use by private operators which in the main were canning companies but included some private lepidopterists. No less than 34 blacklight traps were known to be operated in 1957. Most of these submitted information.

KANSAS

Prepared by D. L. Matthew and D. E. Gates

Highlights: FALL ARMYWORM infestations were heavier during 1957 than previous years and caused more loss in corn than either CORN EARWORM or EUROPEAN CORN BORER. EUROPEAN CORN BORER increased populations caused estimated loss of $1,428,000, four times the 1956 loss. WEBWORMS destroyed most of second alfalfa cutting for an estimated 143,000 ton loss. SPOTTED ALFALFA APHID infestations remained generally low throughout the season and although moisture levels were much higher than during 1956, high numbers of CHINCH BUGS were found in hibernation habitat. SMALLER EUROPEAN ELM BARK BEETLE distribution has now moved nearly across the State. Dutch elm disease was reported for first time. POTATO PSYLLID infestations were found for first time in Kansas.

Cereal and Forage Crop Insects: GRASSHOPPER (Melanoplus spp.) nymphs began emergence the last of April; however, cool and moist soil and weather conditions retarded the main hatch until the first of June. Populations then developed much as predicted for central, north central and western areas. Dominant crop-feeding species were M. differentialis, M. bivittatus, M. bilituratus and M. femur-rubrum. Extremely destructive infestations occurred in localized areas in central and north central counties. Populations were non-economic to light in southeastern counties. Rangeland species, primarily Ageneotettix deorum, M. packardii, Mermeria sp., Aulocara elliotti, and Phlibostroma quadrimaculatum, failed to build up to expected levels (severe to very severe) across major range areas. Heavy flights of M. bilituratus bilituratus moved into western counties during September and October and caused extensive damage to wheat. A summary of county agent reports indicated that an estimated 1,023,120 acres were sprayed plus 616,480 acres baited for crop protection during 1957. These and other control measures gave an estimated $12,000,000 saving to Kansas agriculture for the year. FALL ARMYWORM (Laphygma frugiperda) showed a marked increase and caused greater loss in corn yields than either European corn borer or corn earworm. Infestations were heavier, more widespread and more destructive than in previous years. Most corn acreage was infested and ear-drop ranged 4-30 percent in many north central and northeast fields. Earlier whorl and stalk feeding caused retarded plant growth and subsequent yield losses. WEBWORM (Loxostege spp.) infestations developed rapidly on second-growth alfalfa and were the highest since 1945. Although most eastern alfalfa fields were infested to some degree, heaviest populations were in central and south central areas. An estimated 143,000 tons of alfalfa hay was destroyed and there was damage to corn and sorghum seedlings in several localized areas. Although harvested corn acreage was equal to the 84-year low, yield loss from heavy EUROPEAN CORN BORER (Pyrausta nubilalis) infestations was an estimated $1,428,000, four times the 1956 loss. Heaviest borer populations occurred in northeastern counties averaging 4-90 percent stalk infestation. County averages ranged 4-591 per 100 stalks. CHINCH BUG (Blissus leucopterus) populations developed slower than usual because of damp field conditions. Some crop loss occurred in many localized areas of the eastern half of the State. High numbers of adults were found in hibernation during the annual fall survey. County agents report controls applied to 414,730 acres resulting in an estimated $1,484,000 saving of crops. CORN EARWORM (Heliothis zea) was general throughout the State in corn; however, there was practically no infestation in sorghum heads. Activity was associated with fall armyworm which caused the greatest loss. Fewer earworm moths were taken in light traps in 1957 indicating lower populations than during 1956. SPOTTED

ALFALFA APHID (*Therioaphis maculata*) populations increased slowly during spring and early summer and few infestations were reported as economic. Mid-summer infestations remained low generally because of high predator populations, unfavorable webworm competition, perhaps weather conditions and a later development of a fungus disease. Only a few localized fields required control measures. Few aphids could be found in alfalfa fields during December FALSE WIREWORMS (*Eleodes* spp.), although present in most counties of the western half of the State, were less abundant than the previous year. Destructive infestations were reported from a few localized areas in north central counties. ARMYWORM (*Pseudaletia unipuncta*) continued at low levels and was not considered a problem. ARMY CUTWORM (*Chorizagrotis auxiliaris*) feeding was observed in southern counties in early March and developed northward across the State. Infestations were less extensive than in previous years. HESSIAN FLY (*Phytophaga destructor*) continued at non-economic levels. BROWN WHEAT MITE (*Petrobia latens*) populations were practically non-existent in previously heavily infested areas and WINTER GRAIN MITE (*Penthaleus major*) appeared in very light numbers in localized areas of southeastern counties. GREENBUG (*Toxoptera graminum*) infestations were found in a few widely scattered localized areas and were not a serious problem. PALE WESTERN CUTWORM (*Agrotis orthogonia*) was much less important than in 1956. Infestations were limited to extreme western counties and expected heavy larval populations failed to develop. CORN ROOTWORM (*Diabrotica* spp.) infestations showed a slight increase in several north central and northeastern counties, particularly in fields with continuous corn plantings where no controls have been applied. PEA APHID (*Macrosiphum pisi*) failed to develop destructive infestations as in the past four year. Wet cool spring weather retarded development and few economic infestations were found. CORN LEAF APHID (*Rhopalosiphum maidis*) infestations were rather general on corn and also in localized areas over the State on sorghum seedlings. Infestations, however, were not as widespread or severe as during 1956. ENGLISH GRAIN APHID (*Macrosiphum granarium*) appeared in higher numbers on wheat and barley than during 1956 but was not a serious problem. SOUTHWESTERN CORN BORER (*Zeadiatraea grandiosella*) was generally light throughout the eastern two-thirds of the State and as far north as Republic and Nemaha Counties. No economic infestations were found or reported.

Fruit Insects: CODLING MOTH (*Carpocapsa pomonella*) damage was greater than during 1956. Infestations were higher, ranging 65-80 percent infestation in some unsprayed orchards. More late-entry damage occurred than in 1956. PLUM CURCULIO (*Conotrachelus nenuphar*) damage was light throughout the State. RED-BANDED LEAF ROLLER (*Argyrotaenia velutinana*) caused considerable damage to some orchards early in the season. UNSPOTTED TENTIFORM LEAF MINER (*Callisto geminatella*) caused severe yellowing and leaf drop early in the season in some orchards of northeast Kansas where no controls were applied. A STRAWBERRY ROOTWORM (*Paria* sp.) appears to be increasing in older strawberry plantings in northeast areas. First-generation STRAWBERRY LEAF ROLLER (*Ancylis comptana fragariae*) caused considerable damage to unsprayed fields.

Truck Crop Insects: POTATO PSYLLID (*Paratrioza cockerelli*) was found for the first time in Kansas on commercial and garden tomatoes in four southwest counties. This was a new record for the State with specimens collected and identified during week of July 26.

Forest, Ornamental and Shade Tree Insects: SMALLER EUROPEAN ELM BARK BEETLE (*Scolytus multistriatus*) distribution was extended with a new infestation at Garden City, Finney County. Thousands of elm throughout the eastern two-thirds of the State are still heavily infested and the recent finding of Dutch elm disease in Wyandotte, Johnson and Douglas Counties, further emphasizes the seriousness of beetle populations. BAGWORM (*Thyridopteryx ephemeraeformis*) infestations showed an even further increase throughout most central and eastern counties. GREEN-STRIPED MAPLEWORM (*Anisota rubicunda*) activity continued with partial to near-complete defoliation of soft maples in many northeastern areas. Destructive populations of a SCALE (Cryptaspidiotus shastae) continued in localized areas throughout the State with heaviest infestations in central and south central areas. EUROPEAN ELM SCALE (Gossyparia spuria) infestations showed little increase in distribution or intensity. A survey of south central counties showed an abundance of a MEALYBUG (Pseudococcus juniperi) in several localized areas.

Insects Affecting Man and Animals: CATTLE GRUBS (predominantly Hypoderma lineatum) continued at moderate to heavy infestation levels and showed no appreciable increase over 1956. Much higher infestations were found on cattle shipped into the State. STABLE FLY (Stomoxys calcitrans) and HORN FLY (Siphona irritans) populations were much higher than during 1956 and caused great discomfort and harassment of livestock. HOUSE FLY (Musca domestica) appeared in somewhat higher numbers than during 1956 and continued until late fall. SCREW-WORM (Callitroga hominivorax) infestations were active throughout the State and from many areas reported to be the most severe occurrence for several years.

Stored Grain Insects: DERMESTIDS remained the number one interest in stored grain pests and showed an increase in abundance with Trogoderma glabrum the dominant species. KHAPRA BEETLE (T. granarium) has still not been found in Kansas. Populations of other stored products pests, INDIAN-MEAL MOTH, LESSER GRAIN BORERS, GRANARY and RICE WEEVILS and SAW-TOOTHED GRAIN BEETLE showed little change in infestation levels over 1956 continuing moderate numbers.

Light Traps: Four dark-light insect light traps continued in operation throughout the 1957 growing season. Particular moth flights and abundance counts were taken for ARMYWORM, PALE WESTERN CUTWORM, ARMY CUTWORM, FALL ARMYWORM and CORN EARWORM. Traps are located in Finney, Ellis, Riley, and Doniphan Counties.

Cooperators: The following entomologists made contributions at various times during the reporting season that aided in this report: R. E. Beer J. E. Brady, C. C. Burkhardt, L. A. Calkins, L. J. DePew, E. L. Eshbaugh, H. D. Garwood, D. E. Gates, T. L. Harvey, F. A. Knapp, H. Knutson, F. A. Lawson, E. T. Jones, P. H. Marvin, R. H. Painter, W. H. Somsen, H. E. Thompson, D. A. Wilbur.

SUMMARY OF INSECT CONDITIONS - 1957

COLORADO

Reported by Colo. Ins. Detection Comm.

Wheat Insects: PALE WESTERN CUTWORM (Agrotis orthogonia), ARMY CUTWORM (Chorizagrotis auxiliaris), a WESTERN WHEAT STEM MAGGOT (Hylemya cerealis), BROWN WHEAT MITE (Petrobia latens) and GRASSHOPPERS caused some loss. Controls were effective in reducing losses. Total acreage 1,136,500; total yield 22,313,060 bu.; total loss 535,535 bu.; unit value $2.; total value $44,626,120; loss value $1,071,070; acres controlled 231,959; cost of control $463,918; savings $4,175,262. Grasshoppers feeding on margins of fall planted wheat caused considerable damage. Bait was applied to 780,000 acres and spray to 153,800 acres. Cost of control $225,400; savings $654,468

Alfalfa Insects: PEA APHID (Macrosiphum pisi) and ALFALFA WEEVIL (Hypera postica) caused some loss in second cutting alfalfa. AN ALFALFA WEEVIL

PARASITE (Bathyplectes curculionis) was a factor in reducing damage . ALFALFA LOOPER (Autographa californica) and ALFALFA CATERPILLAR (Colias philodice eurytheme) were responsible for slight damage in some areas. Total acreage 654,600; total yield 1,720,474 ton; total loss 36,662 ton; acres controlled 144,335; unit value $25; total value $43,011,750; loss value $841,575; cost of control $288,670; savings $577,340.

Field Corn Insects: CORN EARWORM (Heliothis zea) and FALL ARMYWORM (Laphygma frugiperda) were the major cause of loss. In some areas SEED-CORN MAGGOT (Hylemya cilicrura), WESTERN CORN ROOTWORM (Diabrotica virgifera) and TWO-SPOTTED SPIDER MITE (Tetranychus telarius) caused some loss of stand and yield. Total acreage 421,799; total yield 23,800,350 bu.; total loss 1,266,333 bu.; acres controlled 37,696; unit value $1.15; total value $27,370,402; loss value $2,026,612; cost of control $75,392; savings $2,737,040.

Dry Bean Insects: Loss of bean stand due to PALE WESTERN CUTWORM (Agrotis orthogonia) and ARMY CUTWORM (Chorizagrotis auxiliaris) occurred in some areas. MEXICAN BEAN BEETLE (Epilachna varivestis) was the major problem. In southwest areas WESTERN BEAN CUTWORM (Loxagrotis albicosta) was a problem before and during harvest. Total acreage 191,050; total yield 1,666,770/100# bags; total loss 42,894/100# bags; acres controlled 39,185; unit value $6.30; total value $10,500,651; loss value $269,949; cost of control $78,370; savings $539,898.

Potato Insects: POTATO PSYLLID (Paratrioza cockerelli) was the major pest of potatoes. Late in the growing season GREEN PEACH APHID (Myzus persicae) and POTATO APHID (Macrosiphum solanifolii) were a problem in fields being grown for seed. SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) caused considerable incidence of aster yellows. Total acreage 58,130; total yield 11,626,000/100# bags; total loss 1,478,129/100# bags; acres controlled 51,270; unit value $3.00; total value $39,776,700; loss value $5,107,830; cost of control $410,160; savings $19,888,350.

Sugar Beet Insects: There were no general insect infestations on sugar beets. Only in localized areas were control measures necessary. PALE WESTERN CUTWORM (Agrotis orthogonia), ARMY CUTWORM (Chorizagrotis auxiliaris), SUGAR BEET ROOT MAGGOT (Tetanops myopaeformis) and BEET WEBWORM (Loxostege sticticalis) were controlled with losses of less than one percent. Total acreage 122,171; total yield 2,036,563 ton; total loss 1000 ton; acreage controlled 20,374; unit value $11.00; total value $22,402,193; loss value $11,000; cost of control $40,748; savings $372,028.

Snap Bean Insects: Loss to snap beans was primarily due to MEXICAN BEAN BEETLE (Epilachna varivestis). Total acreage 2,200; total yield 10,350 tons; total loss 227 tons; acres controlled 2,200; unit value $100; total value $1,035,000; loss value $22,700; cost of control $13,200; savings $517,500.

Cabbage Insects: CABBAGE LOOPER (Trichoplusia ni), CABBAGE APHID (Brevicoryne brassicae) and BEET WEBWORM (Loxostege sticticalis) caused some loss to cabbage. Total acreage 4,810; total yeaid 1,095,000 cwt.; total loss 48,000 cwt.; acres controlled 4,473; unit value $1.50; total value $1,642,500; loss value $72,000; cost of control $8,946; savings $821,250.

Sweet Corn Insects: Damage to sweet corn was caused by CORN EARWORM (Heliothis zea) and FALL ARMYWORM (Laphygma frugiperda). There was some incidence of SEED-CORN MAGGOT (Hylemya cilicrura) and TWO-SPOTTED MITE (Tetranychus telarius). Total acreage 1,710; total yield 95,400 cwt.; total loss 1,794 cwt.; acres controlled 980; unit value $3.00; total value $286,200; loss value $5,382; cost of control $1,960; savings $23,238.

Lettuce Insects: A LETTUCE LOOPER, CABBAGE LOOPER (Trichoplusia ni) & 6-SPOTTED LEAFHOPPER (Macrosteles fascifrons) caused considerable loss to lettuce. Total acreage 12,570; total yield 3,468,000 cartons; total loss 506,550 cartons; acres controlled 10,700; unit value $3.00; total value $10,404,000; loss value $1,519,650; cost of control $21,400; savings $5,202,000.

Onion Insects: Losses to onions were caused by ONION MAGGOT (Hylemya antiqua), SEED-CORN MAGGOT (Hylemya cilicrura) and SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons). Total acreage 8,370; total yield 2,711,000 cwt.; total loss 148,946 cwt.; acres controlled 6,057; unit value $1.50; total value $4,066,500; loss value $223,419; cost of control $36,342; savings $1,355,499.

Pea Insects: Light losses to peas resulted from the activity of CABBAGE LOOPER (Trichoplusia ni), a LETTUCE LOOPER, ALFALFA LOOPER (Autographa californica), PEA APHID (Macrosiphum pisi) and PEA WEEVIL (Bruchus pisorum). Total acreage 3,130; total yield 3,130 ton; total loss 31 tons; acres controlled 565; unit value $75; total value $234,750; loss value $2,325; cost of control $1,130; savings $23,475.

Tomato Insects: Losses to tomatoes in localized areas were due to TOMATO FRUITWORM(Heliothis zea), TOMATO PSYLLID (Paratrioza cockerelli) and TOMATO HORNWORM (Protoparce quinquemaculata). Total acreage 3,340; total yield 28,650 tons; total loss 573 tons; acres controlled 3,340; unit value $24; total value $687,600; loss value $13,752; cost of control $20,040; savings $229,200.

Apple Insects: CODLING MOTH (Carpocapsa pomonella), TWO-SPOTTED SPIDER MITE (Tetranychus telarius) and CLOVER MITE (Bryobia praetiosa) were the main cause of loss to apples. Total trees 341,856; total yield 940,732 bu.; total loss 57,631 bu.; trees controlled 306,684; unit value $1.50; total value $1,411,098; loss value $86,246; cost of control $306,684; savings $705,549.

Peach Insects: Light infestations of GREEN PEACH APHID (Myzus persicae), PEACH TREE BORER (Sanninoidea exitiosa) and PEACH TWIG BORER (Anarsia lineatella) occurred on peaches. Total trees 826,026; total yield 1,604,191 bu.; total loss 16,041 bu.; trees controlled 820,930; unit value $1.75; total value $2,807,334; loss value $28,071; cost of control $606,250; savings $1,403,667;

Forest, Ornamental and Shade Tree Insects: Damage to forest trees was caused mainly by GR.BAS. TENT CATERPILLAR (Malacosoma fragilis), DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae) and BLACK HILLS BEETLE (D. ponderosae). Ornamentals infested with SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons), ARMY CUTWORM (Chorizagrotis auxiliaris), BEET WEBWORM (Loxostege sticticalis), PEAR-SLUG (Caliroa cerasi), OYSTERSHELL SCALE (Lepidosaphes ulmi) and GRASSHOPPERS. The insect causing the most concern on shade trees was EUROPEAN ELM SCALE (Gossyparia spuria) was

Insects Affecting Man and Animals: Mosquitoes were a source of irritation to man and animals. Milk production dropped in many dairy herds and horses could not be worked because of sores on their backs. Other insects affecting animals were COMMON CATTLE GRUB (Hypoderma lineatum) , SHEEP KED (Melophagus ovinus) and LICE.

Beneficial Insects: Predators and parasites contributed considerably to the control of economic pests in 1957. Bathyplectes curculionis parasitized 50 percent of alfalfa weevil larvae. There have been high populations of predators, such as, lady beetles, lacewings, syrphids, nabids and predacious mites.

Estimated Insect Control, Cost of Control, Loss and Savings - 1957

Total crop acres	3,614,671
Total fruit trees	1,167,882
Total acres controlled	1,486,934
Total trees controlled	1,111,684
Total crop value	$170,099,290
Total loss value	$ 7,900,303
Total control cost	$ 2,598,610
Total savings	$ 39,225,764

Values given are *estimates* only for the crops included in the report.

SOME INSECT LOSS ESTIMATES FOR 1957

In recent years a concerted effort has been made to obtain loss figures on insect damage. Many loss estimates have been included in the text of the State summaries for 1957. In addition, the information below was submitted in tabular form from Maryland, Ark., New Jersey and Pennsylvania. During the coming season it is suggested that particular emphasis be pointed by all workers toward accumulating more specific data on insect damage to crops, forest and livestock. Efforts in this direction will be greatly appreciated.

STATE - Pennsylvania

Submitted by J. O. Pepper

Crop	Insect(s)	County	Total Acreage	Total Production	Animals Acreage Treated	Cost Treatment	Estimated Saving
Dairy	Biting flies	All		946,000 cows	Animals treated 446,000	$223,000	$2,051,600
Legume Hay	Leafhopper	All	200,000		Acreage treated 100,000	$300,000	$1,110,000
	Spittlebug	All	2¼ million		1 million	$3 million	$7,095,000

STATE - New Jersey

Submitted by L. G. Merrill, Jr.

Crop	Insect(s)	County	Total Acreage	Total Production	Unit Value	Total Value	Estimated % Loss	Unit Loss	Present Market Value $Loss	Acreage Treated	Cost Treatment	Estimated Saving
Alfalfa	Alfalfa weevil, spittle-bug, pea aphid	All	100,000	215,000 tons	$50	$10,750,000	10%	21,500 tons	1,075,000	80,000	$200.000	$4,100,000
Peach	Plum curculio, oriental fruit moth	All	10,000	2,000,000 bu.	$2.5	$5,000,000	5%	250,000 bu.	625,000	100%	$70,000	$2,000,000

STATE - Maryland

Submitted by Wallace C. Harding, Jr.

Crop	Insect(s)	County	Total Acreage	Total Production	Unit Value $	Total Value $	Est. Loss	Unit Loss	Present Market Value $ Loss	Acreage Treated	Cost Treatment $	Estimated Saving $
alfalfa	alfalfa weevil, meadow spittlebug, pea aphid	All except Garrett	103,000	indicated 1957 199,000 tons	34.60 per ton	6,886,597	7%	13,930 tons	$481,978	85,000	367,200 (4.32 an acre)	1,103,300 based on a saving of ½ ton per acre
tobacco	green peach aphid, hornworms, flea beetles, tobacco budworm	Anne Arundel, Calvert, Charles, Prince Georges, St.Marys	37,000	32,375,000 lbs.	.50 per lb.	16,187,500	6%	1,942,500 lbs.	$971,250	28,000	140,000 ($5.00 per acre includes aircraft treatments)	2,520,000 based on a saving of 200 lbs. per acre
corn for grain	armyworm, corn earworm, European corn borer, fall army-worm, sap beetles	All	336,000	11,760,000 bushels	1.31 per bushel	15,405,600	9%	1,058,400 bushels	$1,386,504	little if any		
corn (for grain)	European corn borer	All	336,000	11,760,000 bushels	1.31 per bushel	15,405,600	1.8%	211,680 bushels	$277,301	little if any		

Damage from European corn borer alone

STATE - Arkansas

Submitted by W. P. Boyer

Crop	Insect(s)	County	Total Acreage	Total Production	Unit Value $	Total Value $	Est. Loss	Unit Loss	Present Market Value $ Loss	Acreage Treated	Cost Treatment $	Estimated Saving $
cotton	Boll weevil, Bollworm, Aphids, Mites	All	1,130,000	985,000 bales	$1.55/bale	152,675,000	7½%	73,875 bales	$11,450,625	1,100,000	15,400,000	$62,150,000
corn	European corn borer, SW corn borer, Fall armyworm, Corn earworm, Sugarcane beetle	All	516,000	13,932,000 bu.	$1.25/bu.	17,415,000	20%	2,786,000 bu.	$3,483,000	2,000	$4,000	$12,000